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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,678	11/18/2003	Lacy G. Cook	PD-03W013	4544
7590 06/09/2005			EXAMINER	
John E. Gunther Raytheon Company P.O. Box 902 (E1/E150) El Segundo, CA 90245-0902			TANINGCO, MARCUS H	
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/715,678

Applicant(s)

COOK, LACY G.

Examiner

Marcus H. Taningco

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/7/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jamieson (US 5,446,581) in view of Kirkham (US 6,424,460).

Re claim 1, Jamieson discloses an infrared lens system (Fig. 1) comprising: a front lens **11** having negative optical power (Fig. 1) with a refractive index of about 3.0 (TABLE II); an intermediate lens group **12** and **13** to receive infrared light from the front lens **11** comprising an intermediate lens; a rear lens **14** to receive infrared light from the intermediate lens having positive optical power (Fig. 1) with a refractive index of about 3.0 (TABLE II); and an infrared detector array (Col. 6, 31-34) that receives light from the rear lens **14** (Fig. 1) wherein the system has a pupil (Col. 5, 32-35) located between the rear lens **14** and the detector (Fig. 1). Although Jamieson fails to specify the front and rear lens having a refractive index from about 2.0 to 3.0, wherein the front lens is not made of silicon or germanium, Kirkham teaches it is well known and conventional to use a front lens made of zinc sulphide having a refractive index close to zero. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jamieson to include lenses made of zinc sulfide since silicon or germanium,

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and zinc sulfide are known as art recognized equivalents in the optical art and the selection of any of these known equivalents would be within the level of ordinary skill in the art.

Re claim 2, Jamieson discloses a lens system (Figs. 3 and 5) wherein the front lens **21** and the intermediate lens **32** have a general aspheric configuration (Col. 6, 30-34).

Re claim 3, Jamieson discloses an optical system comprising lenses made of silicon and fails to teach other lens materials selected from the group consisting of zinc sulfide, zinc selenide, arsenic trisulfide, and antir. Kirkham discloses an optical system comprising lenses made of zinc sulfide (Col. 1, 19-27). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jamieson to include lenses made of zinc sulfide since the silicon and zinc sulfide are known as art recognized equivalents in the optical art and the selection of any of these known equivalents would be within the level of ordinary skill in the art.

Re claims 4, 6-8, and 12-14, Jamieson discloses the claimed invention including the material of the lenses being silicon, which does not have a refractive index close to zero. However, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the material of the lens to be one of those with a refractive index close to zero, such as zinc sulfide, for the reasons stated above.

Re claims 5 and 19, Jamieson discloses an optical system comprising lenses made of silicon and fails to teach other lens materials selected from the group consisting of sapphire, spinel, barium fluoride, calcium fluoride, magnesium fluoride, and magnesium oxide. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jamieson to include lenses made of one of the aforementioned materials since silicon and

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said materials are known as art recognized equivalents in the optical art to be used in infrared lenses and the selection of any of these known equivalents would be within the level of ordinary skill in the art.

Re claim 9, Jamieson teaches a system as recited above operable in a 3-5 micron wavelength range (Col. 4, 3-9).

Re claims 10 and 16, Jamieson discloses the claimed invention comprising a detector (Fig. 1) with an opening at the pupil (Col. 5, 32-35) but fails to teach a cold shield. Kirkham teaches an optical system (Fig. 1) comprising a cold shield **J**. It would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Jamieson with a cold shield in order to cool the detector during infrared applications.

Re claim 11, Jamieson discloses an infrared lens system (Fig. 1) comprising: a front lens **11** having negative optical power (Fig. 1); an intermediate lens group **12** and **13** to receive infrared light from the front lens **11** comprising an intermediate lens; a rear lens **14** to receive infrared light from the intermediate lens having positive optical power (Fig. 1) wherein the lens system (Figs. 3 and 5) comprises front lens **21** and intermediate lens **32** having a general aspheric configuration (Col. 6, 30-34).; and an infrared detector array (Col. 6, 31-34) that receives light from the rear lens **14** (Fig. 1) wherein the system has a pupil (Col. 5, 32-35) located between the rear lens **14** and the detector (Fig. 1). Although Jamieson fails to specify the front lens is not made of silicon or germanium, Kirkham teaches it is well known and conventional to use a front lens made of zinc sulphide. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jamieson to include lenses made of zinc sulfide since silicon or germanium, and zinc sulfide are known as art recognized equivalents in the optical art

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and the selection of any of these known equivalents would be within the level of ordinary skill in the art.

Re claim 15 Jamieson teaches a system as recited above operable in a 3-5 micron wavelength range (Col. 4, 3-9).

Re claim 17, Jamieson discloses an infrared lens system (Fig. 1) comprising: a front lens **11** having negative optical power (Fig. 1); an intermediate lens group **12** and **13** to receive infrared light from the front lens **11** comprising an intermediate lens; a rear lens **14** to receive infrared light from the intermediate lens having positive optical power (Fig. 1) wherein the lens system (Figs. 3 and 5) comprises front lens **21** and intermediate lens **32** having a general aspheric configuration (Col. 6, 30-34).; and an infrared detector array (Col. 6, 31-34) that receives light from the rear lens **14** (Fig. 1) wherein the system has a pupil (Col. 5, 32-35) located between the rear lens **14** and the detector (Fig. 1). Jamieson discloses the material of the lenses being silicon, which does not have a refractive index close to zero. However, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the material of the lens to be one of those with a refractive index close to zero, such as zinc sulfide, for the reasons stated above.

Re claim 18, Jamieson discloses an optical system comprising lenses made of silicon and fails to teach other lens materials selected from the group consisting of zinc sulfide, zinc selenide, arsenic trisulfide, and amtlr. Kirkham discloses an optical system comprising lenses made of zinc sulfide (Col. 1, 19-27) with a refractive index of from about 2.2 to about 2.6 (TABLE I). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jamieson to include lenses made of zinc sulfide since the silicon

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and zinc sulfide are known as art recognized equivalents in the optical art and the selection of any of these known equivalents would be within the level of ordinary skill in the art.

Re claim 20 Jamieson teaches a system as recited above operable in a 3-5 micron wavelength range (Col. 4, 3-9).

Re claim 21, Jamieson discloses the claimed invention comprising a detector (Fig. 1) with an opening at the pupil (Col. 5, 32-35) but fails to teach a cold shield. Kirkham teaches an optical system (Fig. 1) comprising a cold shield J. It would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Jamieson with a cold shield in order to cool the detector during infrared applications.

Response to Arguments

Applicant's arguments filed 3/29/05 have been fully considered but they are not persuasive. Applicant's main argument is that prior art fails to teach a front lens not made of silicon and is not made of germanium. The Examiner respectfully disagrees. Kirkham teaches in Col. 1, lines 10-16, "...a first lens...made of zinc sulphide," Therefore, prior art has overcome the argument made by the applicant and the Examiner repeats the rejection.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcus H. Taningco whose telephone number is (571) 272-1848. The examiner can normally be reached on M - F 8:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MT


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